Mr. Cirian,

This email is to follow-up on the project update conference call discussion (April 27, 2016) regarding the soil gas screening scope of work being conducted at the CFAC Site. As part of the work proposed in the CFAC RI/FS Work Plan and Phase I SAP (dated November 23, 2015), Roux Associates proposed to manually install a temporary soil gas probe at various locations within the different landfills at the Site; and at each location, to screen soil gas for the presence of methane using a landfill gas meter and for VOCs using a photo-ionization detector (VOCs). As of April 29, 2016, Roux Associates field personnel have completed screening utilizing the soil gas probe method at four locations within the Wet Scrubber Sludge Pond and two locations within the Center Landfill. Roux Associates personnel also screened ten existing landfill vents present in the West Landfill. A map of the locations completed is attached to this email for reference.

Commented [WA1]: Construction details of the West Landfill vents is unknown. It is difficult to use any data collected from these vents to compare with data collected form other areas from soil gas probes installed at shallow (4-5 ft) depths. The figure is misleading because it uses the same symbol for the west landfill vents as the soil gas probes installed in the other areas.

Results of the screening activities completed are provided below:

Screening Location ID	Methane (%LEL)	VOCs (ppm)	Location
CFSGS-010	ND	ND	Wet Scrubber Sludge Pond
CFSGS-011	ND	ND	Wet Scrubber Sludge Pond
CFSGS-012	ND	ND	Wet Scrubber Sludge Pond
CFSGS-013	ND	ND	Wet Scrubber Sludge Pond
CFSGS-034	ND	ND	West Landfill Vent
CFSGS-035	ND	ND	West Landfill Vent
CFSGS-036	ND	ND	West Landfill Vent
CFSGS-037	ND	ND	West Landfill Vent
CFSGS-038	ND	ND	West Landfill Vent
CFSGS-039	ND	ND	West Landfill Vent
CFSGS-040	ND	ND	West Landfill Vent
CFSGS-041	0.1	ND	West Landfill Vent
CFSGS-042	ND	ND	West Landfill Vent
CFSGS-043	ND	ND	West Landfill Vent
CFSGS-014	ND	4.9	Center Landfill
CFSGS-015	ND	0.7	Center Landfill

Roux Associates personnel were unable to manually install the soil gas probe at locations proposed in the Industrial and Sanitary landfills due to refusal at approximately 1 to 2 feet below land surface. Observations by the field personnel suggest that the soils in this interval consist of compacted coarse gravel, cobbles or boulders which consistently prevent the soil gas probe from being advanced any deeper. Roux Associates personnel subsequently attempted to utilize a commercially available mechanical auger drill to attempt to bypass the refusal depth. However, refusal was still encountered between 1-2 feet below land surface at both the industrial and sanitary landfills.

Commented [WA2]: This should also say that soil gas probes were unable to be installed in the West Landfill for the same reasons.

Commented [WA3]: We believe that the coarse material where refusal was met is the result of a structural cap on the landfill. Consider saying this.

Commented [WA4]: Was the auger tried at the West Landfill? I don't think it was but it should say that the auger was not attempted at the west landfill.

Because of the difficulties encountered utilizing the manual and mechanical methods, Roux Associates is proposing to discontinue the soil gas screening effort at this time. As summarized in the above table, the soil gas screening results obtained thus far indicate landfills are not significant sources of methane or

Commented [WA5]: Can you utilize the Geoprobe rig when it is on site to install soil gas probes in the areas where no screening was performed? Industrial, sanitary and west landfills?

VOCs. Although soil gas samples could not be collected from the sanitary or industrial landfills, sampling for VOCs in soil and groundwater is proposed in the areas around all of the landfills as part of the Phase I Site Characterization. The locations of the existing and proposed monitoring wells adjacent to and downgradient from the landfills are shown in attached map. If the groundwater samples from these wells indicate the presence of VOCs, the need for further sampling within the landfills for VOCs will be re-evaluated, with the results of this re-evaluation to be documented in the Phase 1 Site Characterization Summary Report.

Roux Associates is requesting that you provide your concurrence with the approach outlined in this email. If you concur, the changes outlined in this email would also be documented in the SAP Addendum, which is currently being prepared by Roux Associates and will be submitted in May 2016.

If you have any questions, please feel free to give me a call at the number below. Thanks.

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Commented [WA6]: I would argue that the presence of VOCs in the Center Landfill IS a significant finding. Given the relatively shallow depth of the soil gas probes and intended use as a screening tool, any findings of VOCs should be considered a significant finding especially given that the PID is not a compound specific instrument. If the purpose of the soil gas probes was for screening, then any detection of VOCs should trigger the need for additional investigation in those areas.

Commented [WA7]: Consider using the Geoprobe rig when it is on site to install soil gas probes in these areas including the West Landfill.

Commented [WA8]: Borings placed outside of the landfill areas may be missing a significant source area if present within the landfills. Depending on how many borings you place around the landfills, you may miss GW contamination and may miss sources of soil contamination if present.

Commented [WA9]: Depending on the number and distribution of wells placed outside the landfills, you may miss groundwater contamination. Especially given the discontinuous nature of the perched water table and limited knowledge we have in terms of the hydrogeological flow regime beneath the site. It would be one thing if we knew more about the groundwater flow system and could place wells in a focused location based on reasonable assumptions from known data. We do not have enough of this data though so I have a hard time making this leap. Simply placing some wells and soil borings around the landfill areas to check for the presence of VOCs is not enough in my opinion given that we don't even know what type of VOCs we are looking at. Floaters? Sinkers? For example, the proposed MWs at the Central Landfill (where soil gas screening DID indicate the presence of VOCs) I only see one proposed well pair. That would not be enough data to show that VOCs in GW do not migrate outward from the Central Landfill. Likewise, at the Industrial Landfill, there is only one well cluster proposed and at Sanitary Landfill there is only one shallow well and no deep well proposed. Proposed well locations for the West Landfill are not close to the edge of the landfill area. All of these proposed well locations appear to presume a groundwater flow direction in areas where we do not have any data to show what the flow direction looks like in those areas. Clearly, given the discontinuous nature of the water bearing units within the glacial sediments, we should expect the flow regime to be complex and likely vary across areas the site. I do not think that we can presume a general GW flow direction for the entire site and only place one well cluster per area and expect that to be enough data to justify that there is no need for further sampling within the landfill areas, especially in areas where soil gas screening was not completed.